

## **SPECIAL SPECIFICATION**

### **SECTION 13039S**

#### **CLEANROOM RESILIENT FLOORING**

##### **PART 1 - GENERAL**

##### **1.01 DESCRIPTION OF WORK**

- A. This Section specifies the requirements necessary to furnish and install the cleanroom resilient flooring and base. Work shall include the following:
  - 1. Rubber tile flooring
  - 2. Rubber wall base
  - 3. Subfloor preparation

##### **1.02 RELATED WORK**

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. Requirements of the following Project Specification Sections apply to this section:
  - 1. Section 01110S – Clean Construction Protocol
  - 2. Section 01111S – Cleanroom Construction And Cleaning Procedures
  - 3. Section 01112S – Cleanroom Certification And Acceptance
  - 4. Section 13015S– Cleanroom Access Flooring
  - 5. Section 13036S – Cleanroom Wall System
  - 6. Section 13063S– Cleanroom Ceiling System
- C. CAUTION: Use of this Section without including all of the above-listed items will result in omission of basic requirements.
- D. In the event of conflict regarding cleanroom resilient flooring requirements between this section and any other section, the provisions of this Section shall govern.

### 1.03 REFERENCES/DEFINITIONS

#### A. American Society for Testing and Materials (ASTM)

1. ASTM E-648-91 Test method for critical radiant flux of floor covering system using a radiant energy source.
2. ASTM E-662-88 Test method for specific density of smoke generated by solid materials.
3. ASTM C-501 Resistance to taber abrasion using H-18 wheel, 500 gram load 1,000 cycles.
4. ASTM D-2047-85 Static coefficient of friction.
5. ASTM F-1344-93 Standard specification for rubber floor tile.
6. ASTM 1860-98 Standard specification for rubber sheet floor covering with backing.
7. ASTM 1859-98 Standard specification for rubber sheet floor covering without backing.
8. ASTM F-1861-98 Standard specification for resilient wall base.
9. ASTM F-710-98 Practice for preparing concrete floors and other monolithic floors to receive resilient flooring.
10. ASTM F-150 Test for conductivity.
11. FTM 4046-101 Decay-Time.
12. ESD STM 97.2 Static generation test method.
13. ESD-S7.1-100 Test for conductivity.
14. ASTM E-84 Surface burning of building materials.
15. FS RR-T-650 D Federal specification for stairtreads.

B. National Fire Protection Association (NFPA)

1. NFPA 253-1984 Test method for critical radiant flux of floor covering systems using a radiant energy source.
2. NFPA-258-1989 Test method for specific density of smoke generated by solid materials.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's technical data for each type of resilient flooring and accessory, including MSDS (Material Safety Data Sheets)
- B. Samples for Initial Selection Purposes: Submit manufacturer's standard color charts in form of actual sections of resilient flooring, including accessories, showing full range of colors and patterns available, for each type of flooring required.
- C. Samples for Verification Purposes: Submit the following samples of each type, color, and pattern of resilient flooring required, showing full-range of color and pattern variations.
- D. Certification for Fire Test Performance: Submit certification from an independent testing laboratory acceptable to authorities having jurisdiction that resilient flooring complies with fire test performance requirements.
- E. Maintenance Instructions: Submit two (2) copies of manufacturer's recommended maintenance practice for each type of resilient flooring and accessory required.
- F. Provide plans showing seaming pattern and/or color pattern.

1.05 QUALITY ASSURANCE

- A. Manufacturer: Provide resilient flooring manufactured by a firm with a minimum of 10 years experience in the fabrication of resilient flooring of types equivalent to those specified. Manufacturers proposed for use, which are not named in this Section shall submit evidence of ability to meet performance requirements specified not less than 10 days prior to bid date.
  1. Color Matching: Provide resilient flooring products, including wall base and accessories, from one manufacturer to ensure color matching.
  2. Manufacturer capable of providing field service representation.

- B. Installers Qualifications: Installer experienced (minimum of 2 years) to perform work of this section who has specialized in the installation of work similar to that required for this project and who is acceptable to the product manufacturer.
- C. Materials: For each type of material required for the work of this Section, provide primary materials which are the products of one manufacturer. Provide secondary materials which are acceptable to the manufacturer of the primary materials. Comply with applicable regulations regarding VOC (volatile organic compound) content of adhesives.

#### 1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in labeled packages. Store and handle in strict compliance with manufacturer's recommendations. Protect from damage due to weather, excessive temperatures, and construction operations.
- B. Deliver materials sufficiently in advance of installation to condition materials to room temperature prior to installation.

#### 1.07 PROJECT CONDITIONS

- A. Maintain a temperature of 68 degrees F (20 degrees C) plus or minus 5 degrees F (3 degrees C) in spaces to receive resilient flooring. Specified temperature shall be maintained at least 48 hours before, during, and 48 hours after installation.
- B. Install resilient flooring and accessories after other finishing operations, including painting, have been completed. Do not install resilient flooring over concrete slabs until the latter have been cured and are sufficiently dry to achieve bond with adhesive as determined by resilient flooring manufacturer's bond and moisture test.

#### 1.08 WARRANTY

- A. Provide manufacturer's standard one-year warranty against defects in manufacturing and workmanship of resilient flooring products. Provide manufacturer's standard limited wear warranty/conductivity warranty as specified under each product as applicable.

#### 1.09 EXTRA MATERIALS

- A. Furnish full size units equal to 3 percent of quantity of resilient flooring installed as extra materials. Properly label and package extra materials. Deliver to Owner's designated storage area.

### PART 2 - PRODUCTS

#### 2.01 ACCEPTABLE MANUFACTURER

Manufacturers: Subject to all requirements for materials and performances specified herein,

provide resilient flooring by the following:

- A. NORA
- B. VPI
- C. FORBO

## 2.02 RESILIENT TILE FLOORING

- A. Product Name: Basis of Design: Noraplan Mega AL, ESD control, static dissipative, oil and grease resistant, smooth surface, 2.0 mm (0.08 inches) thickness, 61 cm by 61 cm (24 inches by 24 inches) tile size. Rubber content approximately 36% (NBR).
- B. Material: Nora rubber free from reground rubber, coarse fillers.
- C. Back of Tile: Smooth, sanded back.
- D. Wear Warranty/ Conductivity Warranty: 5 year wear warranty; 5 year conductivity warranty.
- E. Standard: ASTM F 1344-93, for solid color homogeneous tiles and through-mottled tiles as applicable.
- F. Abrasion Resistance: Taber abrasion test, ASTM C 501, H18 wheel, 500-gram load, 1000 cycles, gram weight loss not greater than .70.
- G. Hardness ASTM D 2240, Shore A, not less than 85.
- H. Slip Resistance: Static coefficient of friction (James Test): ASTM D 2047, equal to or greater than 0.6. ADA guidelines compliance.
- I. Flammability: ASTM E 648; NFPA 253; NBSIR 75-950 result to be not less than 0.45 watts 0per square centimeter, Class 1.
- J. Smoke Density: ASTM E 662, NFPA 258, NBS smoke density, less than 450.
- K. Burn Resistance: Cigarette and solder burn resistance.
- L. Halogen-Free: Products shall contain no halogens.
- M. PVC-Free: Products shall contain no poly-vinyl-chloride.
- N. Asbestos-Free: Products shall contain no asbestos.

- O. Conductivity:  $10^6 - \leq 10^9$  for Noraplan Mega AL when tested according to ASTM F-150 and ESD.S7.1-100.
- P. Decay Time: <.25 seconds for noraplan mega al when tested according to FTM 4046-101.
- Q. Static Generation: <20 volts when tested according to ESD STM 97.2.
- R. Color: As selected.

### PART 3 - EXECUTION

#### 3.01 EXAMINATION

- A. Verify that spaces to receive resilient flooring is suitable for installation. Do not proceed with work until unsatisfactory conditions are corrected. Comply with manufacturer's recommendations including the following:
  - 1. Shall be dry and clean.
  - 2. Substrates shall be free of depressions, raised areas, or other defects, which would telegraph through installed flooring.
  - 3. Temperature of resilient flooring and substrate shall be within specified tolerances.
  - 4. Moisture condition and adhesive bond tests shall be performed as specified.
- B. For applications on concrete, verify curing, hardening, or breaking compounds have not been used. If there are any, do not proceed until compounds have been removed as specified.
- C. For applications on concrete slab on grade or below grade, verify vapor barrier below slab was installed. If no vapor barrier was installed, do not proceed with work unless written acceptance of such conditions is received and submitted.
- D. Perform moisture condition test in each major area, minimum 1 per 2,000 square feet, prior to installation. Moisture condition shall not exceed 3 pounds per 1,000 square feet per 24 hour day, in accordance with Rubber Manufacturers Association Test Method. Do not proceed with work until results of moisture condition tests are acceptable.
- E. Perform adhesive bond test in each major area, minimum 1 per 2,000 square feet, prior to installation. Examine after 72 hours to determine whether bond is solid and no moisture is present. Do not proceed with work until results of bond test are acceptable.

### 3.02 PREPARATION

- A. Comply with ASTM F 710-98 and manufacturer's recommendations for surface preparation. Remove substances incompatible with resilient flooring adhesive by method acceptable to manufacturer.
  - 1. Concrete floors with steel troweled (slick) finish shall be properly roughened up (sanded) to ensure suitable adhesion.
  - 2. Concrete floors with curing, hardening, and breaking compounds shall be abraded with mechanical methods only to remove compounds. Use blastrac or similar equipment.
- B. Fill voids, cracks, and depressions with trowel-applied leveling compounds acceptable to manufacturer. Remove projections and repair other defects to tolerances acceptable to manufacturer.
- C. Vacuum sub-floors immediately prior to installation to remove loose particles.

### 3.03 INSTALLATION

- A. Install resilient flooring in accordance with manufacturer's printed installation instructions. Comply with the following:
  - 1. resilient flooring to provide equal size at perimeter. Adjust layout as necessary to eliminate resilient flooring which is cut to less than half full width.
  - 2. Lay resilient flooring with arrows in the same direction.
  - 3. Install resilient flooring without cracks or voids at seams. Lay seams together without stress. Remove excess adhesive immediately.
  - 4. Scribe resilient flooring neatly at perimeter and obstructions.
  - 5. Extend resilient flooring into reveals, closets, and similar openings.
  - 6. Install reducer strips at exposed edges.
  - 7. Do not mix manufacturing batches of a color within the same area.
  - 8. Do not install resilient flooring over building expansion joints.
  - 9. Do not install defective or damaged resilient flooring.

- B. Install resilient wall base in accordance with manufacturer's printed installation instructions. Install in longest practical lengths. Tightly adhere to substrate. Fill voids due to seams in substrate materials with manufacturer's recommended filler material.

#### 3.04 CLEANING AND PROTECTION

- A. Touch-up and repair minor damage to eliminate all evidence of repair. Remove and replace work, which cannot be satisfactorily repaired.
- B. Clean surfaces only after adhesive has fully cured, no sooner than 72 hours after installation. Clean surfaces using non-abrasive materials and methods recommended by manufacturer. Remove and replace work that cannot be successfully cleaned.
- C. Protect completed work from damage and construction operations and inspect immediately before final acceptance of project.

END OF SECTION